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EPA's Transportation Partners

Shortcuts

Smart Moves for Healthier Communities

Transportation & Environmental Impacts

Virtually all human activities have an impact upon our environment, and transportation is no exception. While transportation is crucial to our economy and our personal lives, the environmental impacts of transportation are equally significant and wide ranging. Today's cars and trucks burn fuel 35 percent more efficiently and with 95 percent less emissions than 30 years ago, but the continuing increase in vehicle miles traveled has slowed our progress toward environmentally sustainable transportation. In 1996, Americans drove nearly 2.3 trillion miles—a distance roughly equal to 12,000 round trips to the sun and an increase of more than 50 percent from 1980. EPA's Transportation Partners program aims to mitigate the environmental impacts of transportation by helping localities curb vehicle traffic. Transportation Partners promotes the voluntary adoption of strategies that improve regional mobility while reducing the need to drive.

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Over-reliance on the automobile as the primary method of local transport forces communities to combat a wide range of environmental impacts. Global climate change, as discussed in the April 1997 issue of *Shortcuts*, has emerged as a major environmental concern. In this issue of *Shortcuts*, we examine the transportation sector's contribution to other environmental problems and their impacts upon human health and the economy.

Impacts of Automobile Travel

Air pollution is perhaps the most visible and publicized environmental effect of transportation. Tailpipe exhaust, gasoline vapors, air conditioner leakage, and dust and chemicals lifted from road surfaces all reduce air quality. Six of the seven regulated air pollutants, including carbon monoxide (CO), nitrogen oxide (NO_X), volatile organic compounds (VOCs), and particulate matter (PM), are generated from the combustion of fossil fuels. These pollutants affect the natural environment by contributing to the formation of ground-level ozone, haze, and acid rain. Airborne pollutants damage plant life, including crops and forests. Air pollution causes agricultural losses of over $2 billion each year—costs that are eventually passed on to consumers.

Impacts on human health and welfare can also be directly attributed to vehicle-related pollutants. NO_X and VOCs, for example, react in the presence of heat and

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Environmental Impa

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sunlight to form ground-level ozone. This type of ozone can cause acute respiratory impairment, aggravate asthma, cause inflammation of lung tissue, and reduce breathing capacity in healthy adults by up to 20 percent. Particulate matter (PM) that comes from fuel combustion is another widespread public health risk. Prolonged exposure to PM has been shown to cause health risks such as respiratory disease, chronic bronchitis, and acute respiratory impairment.

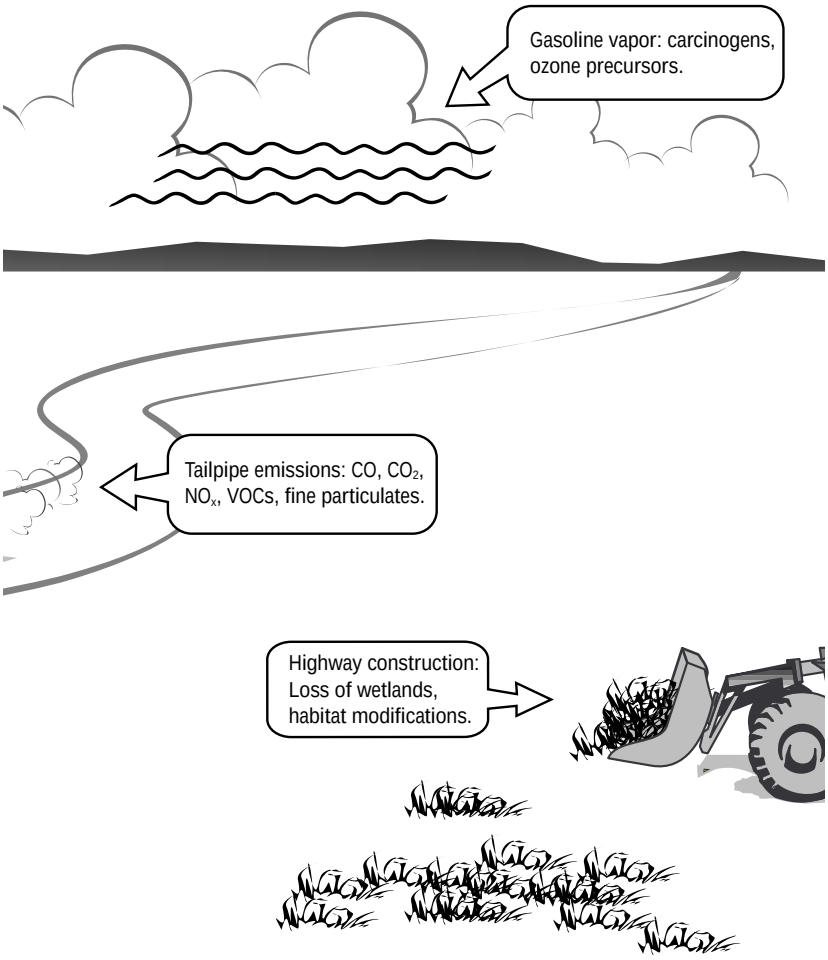
The effects on human health from exposure to air pollution from motor vehicles is staggering. A 1996 University of California at Davis study estimated that mobile source pollution costs the nation between $24 and $450 billion per year. Motor vehicle pollution is estimated to cause 40,000 premature deaths annually—the same number of fatalities from motor vehicle accidents. A recent study by the Harvard University School of Public Health estimated that annually, up to 15,000 hospital admissions and 50,000 emergency room visits for respiratory conditions in 13 U.S. cities are a result of vehicle-related pollutants. Clearly, these are conditions that need to be mitigated.

The same pollutants that are linked to serious health effects also cause visibility impairment in many parts of the U.S. Visual range has been cut by over 70 percent in many metropolitan areas as well as national parks. But in addition to more apparent air quality effects, other significant, vehicle-related environmental impacts exist.

Thirty-seven percent of the U.S. population is exposed to "annoying" levels of traffic noise. High-decibel levels can interfere with communication and result in physiological effects, such as stress and hearing damage. Traffic noise and vibration can result in economic loss by decreasing workplace productivity, lowering property values, and causing structural damage.

Water runoff from impermeable roads is a major source of water pollution.

from Transportation



Pollutants washed off roadways include de-icing compounds, lead, copper, and other toxic heavy metals. Highways contribute up to 50 percent of suspended solids, 16 percent of hydrocarbons, and 75 percent of metal loading to some streams. Such pollutants harm vital wetland and aquatic habitats, reduce fish stocks, and degrade the quality of the overall riparian system—nearly one-quarter of all lakes have been impaired as a result of roadway runoff. Water quality also suffers from the atmospheric deposition of airborne pollutants. For example, the water quality of the Chesapeake Bay suffers from excess levels of NO_X. Up to 9 percent of all NO_X in the Bay is attributed to atmospheric deposition. Poor water quality affects the ability of the Bay to support local economies, such as the crabbing industry. Impermeable surfaces such as pavement also increase the amount of stormwater runoff and the risk of local flooding.

Other environmental impacts of transportation are less direct. Road maintenance and construction activities disturb, fragment, and sometimes destroy wildlife habitats and may release toxic substances into local ecosystems. Vehicle manufacturing and maintenance are not free of environmental impacts, either. About 57,000 tons of toxic chemicals were released on site from vehicle manufacturing facilities in 1993. Every year, 161 million gallons of used motor oil (an amount greater than the Exxon Valdez spill) are improperly discharged, loading contaminants into lakes and rivers. One mishandled oil change can sufficiently contaminate 1 million gallons of fresh water.

Finally, vehicle parts disposal is also significant: in 1995, 252 million tires were scrapped, 39 percent of which were disposed of improperly or ended up in landfills. Landfilled tires can not only catch on fire and burn for over a year, but they also act as breeding grounds for mosquitoes and other vermin. Additionally, over 75,000 tons of spent, lead-acid car batteries were discarded

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Related Publications

For more information about transportation and environmental impacts, you may want to order some of the following publications from EPA and our Principal Partners:

- *Indicators of the Environmental Impacts of Transportation: Highway, Rail, Aviation, and Maritime Transport* - Publication number EPA 230-R-96-009. Available free from the National Center for Environmental Publications and Information (1-800-490-9198) at the end of July.

- LGC's *Building Livable Communities: A Policymaker's Guide to Transit Oriented Development* - This volume helps community leaders to recognize that building residences, stores, and work places near transit stops can play a major role in creating livable places. $20.

- ICLEI's *Green Fleets: A Guide to Increasing Efficiency and Reducing Emissions from Municipal Fleets.* 38 pages, $20.

- PTI's *Roads Less Traveled: How Sustainable Intelligent Transportation Systems Benefit the Environment* is a combination success story booklet and guide that illustrates how transportation technologies are being used to reduce vehicle miles traveled. Summer 1997.

TP CONTACTS

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(202) 260-6830

TP Web Site
http://www.epa.gov/oppe/tp

TransAct Web Site
http://www.transact.org

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PRINCIPAL PARTNERS

Association for Commuter Transportation
(202) 393-3497

Bicycle Federation of America, Inc.
(202) 463-6622

Center for Clean Air Policy
(202) 408-9260

Environmental Defense Fund
(202) 387-3500

International Council for Local Environmental Initiatives
(510) 540-8843

Local Government Commission: Center for Livable Communities
(916) 448-1198 or
(800) 290-8202

Public Technology, Inc.
(202) 626-2400 or
(800) 852-4934

Renew America
(202) 232-2252
or (800) 922-RENEW

Surface Transportation Policy Project
(202) 466-2636

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into the municipal waste stream. Spent batteries often end up in landfills and can cause local soil and groundwater contamination.

Transportation Alternatives

While engineers continue to work on cleaner, more efficient vehicles, states and communities have a major role to play in slowing the growth of vehicle miles traveled. Some things you can do in your area include:

• Use and support public transit and ridesharing. Fewer cars on the road not only reduces pollution, but saves money. Average Americans spend over 20 percent of their income on automobile-related expenses each year. Driving less reduces wear and tear on your car and may reduce your insurance, fuel, and maintenance costs. Contact Public Technology, Inc. (PTI) to learn more about innovative uses of new technology that improve transit and ridesharing operations.

• Encourage employers to support the use of public transit. Many employers already pay for employee parking. Find out if you can "trade in" your parking space for a transit subsidy. The Association for Commuter Transportation's (ACT's) Corporate Program has extensive information on how to start a trip reduction program at your workplace.

• Use human-powered transportation. Seventeen percent of the miles traveled by individuals are for trips of 5 miles or less. Many trips can be made by bicycle or on foot. People who exercise regularly have 14 percent fewer medical claims to their medical insurance companies than those who do not exercise regularly. The Bicycle Federation of America (BFA) staff includes experts on managing bicycle and pedestrian programs, planning bicycle and pedestrian facilities, and developing safety education materials and programs.

• Explore telecommuting options. Numerous companies have reported that telecommuters are absent less frequently, save the company money, and are able to balance personal obligations with work demands more efficiently. The Association for Commuter Transportation (ACT) is a founding member of Telecommute America.

• Support transit-friendly and pedestrian-friendly development. Walkable neighborhoods that include shops, offices, and transit not only give people more travel options, but also require fewer miles of costly roads. The Local Government Commission's (LGC's) Center for Livable Communities can provide case studies, plans, and policies for turning your neighborhood into a livable community.

• Cities spend millions of dollars to subsidize auto use, often at the expense of transit, pedestrian, and bicycle networks. For help in balancing the disparity in funding between roads and alternative transportation modes, contact the Environmental Defense Fund (EDF) and the International Council for Local Environmental Initiatives (ICLEI). EDF and ICLEI have prepared numerous studies documenting this bias and have proposed policies to correct planning and funding inequities.

• Finally, keep your vehicle properly maintained and tuned. Most autos can improve their gas mileage by 6 percent with a minor tune-up. Properly inflated tires can also improve overall fuel efficiency.

Transportation Partners has access to a wealth of publications and reports further detailing the environmental impacts of transportation. To utilize these resources, please call the Transportation Partners Hotline, search our web site, or contact a Principal Partner organization.